

CLAIMS

What is claimed as being new and desired to be protected by LETTERS PATENT of the United States is as follows:

1. A dual gear, single outlet material pump for enabling a user to provide an equal parallel outflow from the pump, comprising in combination:

a rectilinear base plate having an upper surface and a lower surface with a side edge and having a thickness there between with the base plate having an inflow opening there through, the upper surface of the base plate having a plurality of pin recesses and threaded screw recesses and an idler bearing recess and a drive shaft bearing recess there in;

a lower gear plate having a rectilinear configuration with an upper surface and a lower surface with a side edge and having a thickness there between, the lower gear plate having a tri-lobed aperture there through with each of the lobes having a first diameter, the lower gear plate having an outlet on the edge, the outlet communicating with the tri-lobed aperture;

a pair of lower gears being a drive gear and an idler gear, each gear having an external second diameter with each of the gears having a shaft hole there through, the shaft hole having a third diameter, with the second diameter being slightly less than the first diameter and the second diameter being greater than the

third diameter, the gears being housed within the tri-lobed aperture of the lower gear plate;

a lower pair of associated shaft bearings, one for each of the shafts;

a seal being located between the base plate and the lower gear plate;

a pair of alignment pins;

a spacer plate having an upper surface and a lower surface and a side edge having a thickness there between, the spacer plate having a plurality of pin holes and a plurality of shaft holes and a material flow hole and a plurality of bolt holes and a plurality of alignment pin holes there through, the spacer plate side edge having a plurality of temperature sensor recesses there into;

a seal located between the lower gear plate and the spacer plate;

an idler shaft having a third diameter and sized to be firmly received by the idler gear, the shaft passing through a shaft hole in the spacer plate and the shaft hole of the lower idler gear;

an upper gear plate having a rectilinear configuration with an upper surface and a lower surface with a side edge having a thickness there between, the upper gear plate having a tri-lobed aperture there through with each of the lobes having a first

diameter, the upper gear plate having an outlet on the edge, the outlet communicating with the tri-lobed aperture;

a pair of upper gears being a drive gear and an idler gear, each gear having a external second diameter with each of the gears having a shaft hole there through, the shaft hole having a third diameter, the gears being housed within the tri-lobed aperture of the upper gear plate;

an upper pair of associated shaft bearings, one for each of the shafts;

a top plate having an upper surface and a lower surface with a side edge having a thickness there between, the lower surface of the top plate having a plurality of pin recesses and an idler shaft bearing recess therein and a drive shaft bearing hole there through and, the top plate also having a plurality of screw holes there through;

a seal being positioned between the top plate and the upper gear plate;

a plurality of heating plates being coupled to the sides of the assembled pump to provide heat to the pump and the material as it passes through the pump;

a plurality of temperature sensors coupled to the temperature sensor recesses;

a drive shaft having an upper end and a lower end, the drive shaft being sized to pass through the drive gears and plates and

to be received by a lower bearing on the lower end and an upper bearing on the upper end;

a plurality of bolts to couple the plates to each other; and the pump having an outlet plate for coupling with each of the outlets of the lower gear plate and the upper gear plate to form a single outlet.

2. A material pump, comprising in combination:

a base plate having an inflow opening there through;
at least one gear plate having a tri-lobed aperture communicating with an outlet;
at least one drive gear and at least one lower idler gear housed within the tri-lobed aperture of the gear plate;
an idler shaft and a drive shaft; and
a top plate.

3. A material pump as described in Claim 2 wherein the pump further comprises a plurality of seals located between the plates.

4. A material pump as described in Claim 2 wherein the pump further comprises a plurality of alignment pins to align the components of the pump during assembly.

5. A material pump as described in Claim 2 the pump further comprising:

a manifold having two separate outlets so that the pump is a dual outlet material pump.

6. A single gear, single outlet material pump for enabling a user to provide a continuous predetermined outflow from the pump, comprising in combination:

a rectilinear base plate having an upper surface and a lower surface with a side edge and having a thickness there between with the base plate having an inflow opening there through, the upper surface of the base plate having a plurality of pin recesses and threaded screw recesses and an idler bearing recess and a drive shaft bearing recess there in;

a gear plate having a rectilinear configuration with an upper surface and a lower surface with a side edge and having a thickness there between, the gear plate having a tri-lobed aperture there through with each of the lobes having a first diameter, the gear plate having an outlet on the edge, the outlet communicating with the tri-lobed aperture;

a pair of gears being a drive gear and an idler gear, each gear having an external second diameter with each of the gears having a shaft hole there through, the shaft hole having a third diameter, with the second diameter being slightly less than the first diameter and the second diameter being greater than the third diameter, the gears being housed within the tri-lobed aperture of the gear plate;

a lower pair of associated shaft bearings, one for each of the shafts;

a seal being located between the base plate and the gear plate;

a pair of alignment pins;

an idler shaft having a third diameter and sized to be firmly received by the idler gear, the shaft passing through the shaft hole of the idler gear;

an upper pair of associated shaft bearings, one for each of the shafts;

a top plate having an upper surface and a lower surface with a side edge having a thickness there between, the lower surface of the top plate having a plurality of pin recesses and an idler shaft bearing recess therein and a drive shaft bearing hole there through and, the top plate also having a plurality of screw holes there through and a drive shaft seal associated there with;

a seal being positioned between the top plate and the gear plate;

a plurality of heating plates being coupled to the sides of the assembled pump to provide heat to the pump and the material as it passes through the pump;

a plurality of temperature sensors coupled to the temperature sensor recesses;

a drive shaft having an upper end and a lower end, the drive shaft being sized to pass through the drive gear and to be

received by a lower bearing on the lower end and an upper bearing on the upper end;

a plurality of bolts to couple the plates to each other; and the pump having a single outlet.

7. A method of constructing a dual gear, single outlet material pump, the method comprising, in combination:

providing a base plate having an inflow opening there through and a plurality recesses there in the base plate having recesses to receive and contain shaft bearings;

providing a lower gear plate having a tri-lobed aperture communicating with an outlet with the lower gear plate being coupled to the base plate;

providing a lower drive gear and a lower idler gear, the gears being housed within the tri-lobed aperture of the lower gear plate;

providing a lower pair of associated shaft bearings;

providing a spacer plate having a plurality of holes there through and recesses there into, the spacer plate being coupled to the lower gear plate;

providing an idler shaft and a drive shaft for coupling with the gears of the pump, the idler and drive shafts passing through the passageways of the spacer plate;

providing an upper gear plate having a tri-lobed aperture communicating with an outlet;

providing an upper drive gear and an upper idler gear housed within the tri-lobed aperture of the upper gear plate with the gears coupled to the idler and drive shafts;

providing an upper pair of associated shaft bearings;

providing a top plate having a plurality recesses there in with a drive shaft bearing hole there through and a plurality of screw holes there through, the top plate having recess to receive and contain the idler shaft bearings;

providing a plurality of heating plates being coupled to the sides of the assembled pump, the heating plates being capable of providing heat to material as it moves through the pump;

providing a plurality of temperature sensors coupled to the recesses in the spacer plate, the sensors allowing a user to determine pump temperature;

providing a plurality of bolts to couple the plates to each other; and

coupling, through an outlet manifold, each of the outlets of the lower gear plate and the upper gear plate to form a single outlet, the components when assembled allowing a user to have a dual gear, single outlet material pump which is easily disassembled, cleaned and re-assembled.

8. A dual gear material pump, comprising in combination:

a base plate having an inflow opening there through and a plurality recesses there in;

a lower gear plate having an aperture communicating with an outlet;

 a lower drive gear and a lower idler gear;

 at least one shaft;

 an upper gear plate having an aperture communicating with an outlet;

 an upper drive gear and an upper idler gear;

 a top plate having a plurality recesses there in with a drive shaft hole there through;

 a plurality of heating plates being coupled to the sides of the assembled pump; and

 an outlet manifold having a single outlet.